

Arlington Board of Survey

Rules and Regulations Governing the Design and Installation of Ways Arlington, MA

Regulations Adopted June 28, 2010



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I. Purpose, Jurisdiction, Summary

The Arlington Board of Survey Law (Chapter 42 of the Acts of 2009 of the Commonwealth of Massachusetts) (the “Law”) was enacted to protect the safety, convenience and welfare of the inhabitants of the town, in regard to the laying out and construction of private ways. These Rules and Regulations, authorized by the Law, see St. 2009, c. 42, § 4, are designed to implement the objectives of the Law.

- The Board of Survey law is a regulatory system, requiring review and approval of ways by the Arlington Redevelopment Board (the “Board”), in its capacity as the Town’s Board of Survey.
- A certified copy of the board’s decision must be recorded with the registry of deeds, in the same manner as a zoning special permit.
- Developments that already are subject to board review under zoning, through a special permit or other process (including all residential projects with 6+ units), or historic districts commission, are consolidated for review.
- Approved developments are protected against subsequent zoning changes for a period of **three** years from the date of approval.
- Capitalized terms in these regulations shall have the same definitions as set forth in Section 2 of the Board of Survey Law, unless specifically defined or the context clearly requires otherwise.

II. Definitions

“Applicant”, an owner or his agent, representative or assign.

“Board”, the Arlington redevelopment board, acting in its capacity as the board of survey.

“Commission”, the historic district commission having jurisdiction over a district in which a way is proposed.

“Day”, a calendar day.

“Datum” a set of reference points on the earth’s surface against which position measurements are made.

“Development”, the division of a tract of land into two or more lots, where, such division shall require the construction of one or more ways to ensure the development’s compliance with the access and frontage requirements of the town’s zoning by-law; provided, however, that a deed

evidencing such division has not been recorded at the registry of deeds prior to the effective date of this act. The term "Development" may also include a project consisting of multiple buildings on one lot, in which designated portions are either owned in fee pursuant to a condominium form of ownership or are leased, and in which one or more ways must be created to comply with the aforementioned access and frontage requirement; provided, however, that with respect to a condominium the master deed creating such condominium has not been recorded prior to the effective date of the act and that, with respect to leaseholds, the building department has not issued a building permit for the second building on the single tract of land prior to the effective date of the act.

"Looping", connections that eliminate dead-ends in the utility, water main or road system.

"Lot", an area of land in 1 ownership with definite boundaries used, or available for use, as the site of 1 or more buildings.

"Monument", a surveying reference point marked by a permanently fixed marker to identify the corners and the boundaries of developments, lots, and the points of curves in the street right-of-way.

"Notice", publication in a newspaper of general circulation in the town of Arlington once in each of 2 successive weeks, the first publication to be not less than 14 days before the day of the hearing; provided, however, that such notice shall be posted in a conspicuous place in the town hall for a period of not less than 14 days before the day of the hearing.

"Plan", a plan of the private way or ways and the development that such ways will serve, including all utilities, drainage systems and other site improvements, together with such elements of an application as the board may require and submitted to the board for its approval in accordance with the provisions of the law and the board's rules and regulations.

"Registered mail", registered or certified mail.

"Registry of deeds", the Middlesex county southern district registry of deeds, or, for registered land, the Middlesex county southern district registry district of the land court.

"Utility", public or private utilities serving a development, including water, sewerage, gas and electricity.

"Way", a private way that provides access to 1 or more lots, the construction of which is required to ensure the compliance of a development with the access and frontage requirements of the town's zoning by-law.

III. Procedure & Application

A. Process

Work requiring both Board of Survey approval and a Special Permit are reviewed simultaneously (see Section 8 of the Law). Two separate votes are

taken; Board of Survey is by simple majority, Special Permit is by four of the five members. Section 8 of the Law also directs that work requiring both Board of Survey and Historic District Commission review will be heard in joint session by both authorities, with the chair alternating from one meeting to the next.

The board may in any particular case, where such action is in the public interest and not inconsistent with the intent and purpose of the law, waive strict compliance with its rules and regulations, upon such conditions as it may reasonably impose.

If a proposed development is in or within 100 feet of any wetland, stream, creek, river, brook, pond, lake, 100-year floodplain, or within 200 feet of a perennial stream, approval from the Arlington Conservation Commission is required.

Zoning Board of Appeals approval may be required by Sections 11.04 Floodplain District and 11.05 Inland Wetland District of the Arlington Zoning Bylaw. In addition, for developments proposed along Spy Pond, applicants must demonstrate that they have reviewed the Natural Heritage and Endangered Species Program (NHESP) atlas and obtained permission from NHESP under the Endangered Species Act Regulations at 321 CMR 10.00.

The Board of Survey application should be filed first to be consistent with the MA Wetlands Protection Law. Filing of Notice of Intent with the Conservation Commission at the same time is encouraged.

Names of proposed ways must be satisfactory to the Board of Survey and must have Board approval after review by the Town Engineer before final plan approval and recording.

If any provision of these Rules and Regulations or the administration thereof shall be held unconstitutional, invalid or void, it shall not affect any other provision of these Rules and Regulations or the administration thereof. If there is a conflict between these Rules and Regulations and the Law, the Law shall govern.

Section 2 of the Board of Survey Law requires notice to be posted and published in the newspaper. Section 5 of the Board of Survey Law requires abutter notification at the applicant's expense. In addition, these regulations require assessors certification of the abutters list and these regulations require that abutters be notified at least 14 days prior to the first public hearing on the development.

B. Fees

Filing and inspection fees are due at the time the plan is submitted for review. Inspection fees must be paid, and the way approved, prior to the issuance of a Building Permit in the development.

All expenses for advertising and notification to abutters shall be paid by the applicant.

In addition, a filing fee of \$500 is required at the time of application.

An Inspection fee of \$5 per foot measured along the centerline of the proposed roadway(s), from the centerline of intersection with an existing roadway to the back curb edge of any cul-de-sac, with a minimum of \$1,000.00 is required at the time of application.

In addition to all other fees and charges specified, if, in the course of review of an application, the Board of Survey determines in its sole and absolute discretion that review of all or any part of a proposed project by outside independent consultant(s) of the Board's sole choosing is necessary for proper evaluation of the proposed project or its possible effects on any matter of public interest under the Board's jurisdiction, then the applicant shall provide immediately to the Town, by way of the Director of Planning & Community Development, certified check(s) payable to such consultant(s) in an amount equal to the estimated cost of the relevant services of such consultant(s). No Plan approval under the Board of Survey law shall be granted and no Building Permit or Certificate of Occupancy shall be issued for said project until all such review fees that may be so imposed have been paid in full.

C. Plan Requirements

Ten copies of plans and application materials must be submitted at the time of filing.

Plans must show topography with contour intervals of not greater than two (2) feet. Figures of elevation to represent the natural surface may be provided in addition to contours.

Plans must show any wetlands, streams, creeks, brook, pond, or lake within 100 feet of proposed work and any river within 200 feet of any proposed work.

Plans must show the One Hundred (100) Year Flood Profile as shown on the Middlesex County Flood Insurance Rate Maps issued by the Federal Emergency

Management Agency for the administration of the National Flood Insurance Program.

Plans must show boundaries and character of all existing and proposed easements within or immediately adjacent to the development.

Plans must show boundaries of any existing or proposed areas dedicated to public use.

The title of plans must state the location, owner's name and address, scale, date and name and address of the surveyor. The plan must show north point, areas of all lots, length and bearing of all lot lines, their angles of intersection and the distance on the street line from stone bounds to the nearest lot line, radius and length of curves, ownership and location of abutting property or passageways, street lines, fences, walls, buildings, boundary monuments, natural monuments, waterways and natural drainage courses. If topography is such that it will be necessary to locate certain sewers or drains outside the street, a right-of-way shall be reserved for their location and referred to and described on the plan.

Plans shall be prepared, certified, signed and sealed by a Massachusetts Registered Professional Engineer and/or a Massachusetts Registered Land Surveyor. Plans shall be drawn legibly in accordance with the requirements of Massachusetts General Laws, Chapter 36, Section 13A. Applicants are advised to consult with the plan department of the Registry of Deeds, and if the title to the property is registered land, with the surveying department of the Land Court, to ensure that the plans submitted to the board will also meet the recording requirements of the Registry of Deeds and the Land Court. Plans shall be at a scale of 1 inch = 40 feet or such other scale as the Board of Survey approves prior to the plan being submitted. Sheet sizes shall be 24 inches by 36 inches with margins of 1.5 inches on the left and all others 3/4 of an inch. If multiple sheets are used, an index sheet showing the entire development shall accompany them. The Plan shall be printed in black ink and an electronic file shall accompany submission.

Control datum shall be clearly stated on the plans. All surveys shall originate at control monuments that have been established by the National Geodetic Survey (NGS) to the Commonwealth of Massachusetts and have an accuracy of at least Second Order, as defined by NGS. All plans shall utilize the horizontal datum of the Massachusetts State Plane Coordinate System NAD83 and the NAVD88 vertical datum. All measurements shall be in feet.

Plans must show sufficient data including lengths, bearings, radii and central angles to determine the exact location, direction, and length of every street and

way line, lot line, boundary line, and sufficient data to establish these lines on the ground.

A separate layout plan for each proposed street in the development, at a horizontal scale of 1 inch = 40 feet, showing proposed exterior lines, centerlines, points of tangency, lengths of tangents, lengths of curves, intersection angles, radii of curves, and the location of permanent monuments and benchmarks, together with all lot lines, buildings and other major features within forty (40) feet of exterior street lines. The layout plan shall also show the size and location of all storm drains, water mains and sewers within the street, together with their appurtenances. All water gate-boxes, mains, and service shall be shown with tie-ins so that they may be located by measurements. Sidewalks and planting strips shall also be shown on the layout plan if proposed or required for the development.

Cross section or sections of each roadway shall be properly located and identified by station number, at such intervals along the street as will adequately indicate any roadway variations. The sections shall show sidewalks, utilities, depth of utilities, depth of gravel, crown of road, thickness of surface and materials. Slope of the side of the roadway to the property line shall also be shown.

Directly above or below the layout plan of each proposed street, a profile shall be drawn at a horizontal scale of 1 inch = 40 feet and a vertical scale of 1 inch = 4 feet. The street profile shall show existing center line grades in fine solid lines, existing exterior right side line in fine black long dark broken lines, existing exterior left side line in fine black short dark broken lines and proposed finished center line grades in heavy solid lines. Proposed grade elevations shall be shown by figures at beginning and end points and at fifty (50) foot stations, except on vertical curves where they shall be shown at twenty-five (25) foot stations. Rate of gradient in percentage shall also be shown. All elevations shall refer to Massachusetts Geodetic datum, unless, in the opinion of the Board of Survey, suitable benchmarks are not readily available. Alternative benchmarks must be authorized by the Board prior to the submission of the plans. Profiles shall also indicate the location of any intersecting public or private ways, the location of existing and proposed storm drains, water mains, sewer lines and their appurtenances and other utilities. The profile shall show the rates of grade for sewers, storm drains and water mains.

Plans must give material type for existing and proposed storm drains, water mains and sewers in conformance with the material specifications of these Rules and Regulations unless waived by the Board of Survey.

IV. Design Standards and Specifications

A. Streets

1. Street Classification

For the purposes of these Regulations, streets shall be classified as follows:

- a. Residential Access:** Residential Access Streets are the lowest order streets in the street hierarchy. They provide frontage and access to residential lots and generally carry only traffic generated on the street itself. Residential Access Streets are designed to accommodate up to a maximum average daily traffic of 250 trip ends (effectively 25 single-family houses on the street).
- b. Residential Sub-collector:** Residential Sub-collector Streets also provide access and frontage to residential lots. They are designed to carry traffic collected from intersecting Residential Access Streets and the traffic generated from the street itself. Residential Sub-collector Streets should be designed to discourage shortcircuiting of through traffic by a looped layout or in patterns that are unappealing as shortcuts. Residential Sub-collector Streets are designed to accommodate a maximum average daily traffic of 1,000 trip ends (effectively up to 100 single family houses served by the street).
- c. Primary:** Primary Streets shall include all higher order streets in the street hierarchy, including Residential Collector Streets (which carry traffic between lower order residential streets or local streets and higher order streets), Non-Residential Streets and Arterials.

2. Location and Alignment of Streets

- a.** Streets shall be designed so that they will provide safe and convenient vehicular, bicycle and pedestrian travel, effective fire protection and efficient provision for utilities.
- b.** Streets shall be continuous, of uniform width, coordinated and aligned with each other and with the existing street system in a manner consistent with sound traffic engineering and planning practices.
- c.** Horizontal and vertical alignment shall be such that existing contours and natural features will be preserved to the maximum extent possible.
- d.** Streets shall be laid out to intersect as nearly as possible at right angles. Streets shall not intersect at less than seventy (70) degrees.

e. Minimum Primary Street design standards must conform to accepted traffic design standards in consultation with the Department of Public Works. Minimum street design standards for Residential Sub-collector and Residential Access Streets must conform to Table 1, below.

Table 1
Street Design Minimum Standards

| Characteristic | Street | |
|---|--|--|
| | Residential Sub-collector | Residential Access |
| Maximum Grade | 6% | 8% |
| Minimum Grade | 1% | 1% |
| Maximum Grade of leveling area at approach of intersection (negative grade required) | 2% for 100 feet | 2% for 50 feet |
| Horizontal Alignment: Minimum radius at centerline | 500 feet | 200 feet |
| Vertical Alignment: K-Value | 30 feet per percent change in grade, 100 feet min. | 25 feet per percent change in grade, 100 feet min. |
| Width in all Zoning Districts: Street Width Roadway Width | 50 feet 28 feet | 40 feet 24 feet |
| Intersections Minimum intersection angle Minimum distance between entering streets not directly opposite each other Minimum radius: Street Sideline Curb Radius Stopping Sight Distance | 70 degrees 275 feet 25 feet 32 feet see § A.2.g. below | 70 degrees 275 feet 20 feet 27 feet see § B.2.i. below |
| Sidewalk Width | 5 feet | 4 feet |
| Dead-End Streets Maximum length Minimum length | | 500 feet 225 feet |

| | | |
|---|--|---------|
| Maximum radius of Cul-De-Sac Street Sideline Radius | | 70 feet |
| Minimum radius of Cul-De-Sac: Street Sideline Radius | | 60 feet |
| Curb Radius | | 45 feet |
| Island Radius | | 20 feet |

- f. A minimum 200 foot length tangent shall be provided between the Point of Tangency of one curve and the Point of Curvature of any following curve. Broken-back curves are prohibited.
- g. Stopping sight distance must be provided as measured twenty-five (25) feet from the edge of the intersected traveled way. The stopping sight distance requirement shall be calculated using a hypothetical travel speed 10 M.P.H. greater than the posted or designed speed. A clear sight distance must be maintained from 0.5 feet to 3.75 feet above the pavement surface. Landscaping, fencing and other structures must not obstruct the required sight distances or otherwise jeopardize traffic safety.
- h. Where required by topography, right-of-way widths must exceed standard street widths (from Table 1 above) whenever additional width is necessary to provide adequate earth slopes. Slopes must not exceed four-to-one.

3. Dead End Streets

- a. Where a street ends before the development boundary, and the Board of Survey does not require its extension for access to adjoining property, it shall terminate no less than fifty (50) feet short of the boundary. However, the Board of Survey may require an easement to accommodate drainage facilities, pedestrian traffic, or utilities.
- b. Dead end streets shall not serve more than 25 dwelling units, nor shall existing dead ends be extended to serve more than 25 dwelling units.
- c. Dead end streets shall be designed in accordance with the design standards for residential access streets as provided in these regulations.
- d. An open cul-de-sac turnaround with a central island shall be provided at the end of a permanent dead-end street in accordance with the design standards of these regulations.

f. Dead end streets shall be measured from the centerline of the street from which access to the dead end is obtained to the farthest point of the turn-around right-of-way. Cul-de-sac turnarounds may be provided only at the terminus of a dead end street as a means of reversing direction. Cul-de-sac turnarounds cannot be used to create additional lots that are not at the terminus of a dead end street.

4. Adequacy of Access

- a.** Streets shall connect to and be accessible from public or private ways in which the applicant has legal right of access.
- b.** The Plan shall provide a system of pedestrian circulation to and within the development. This system shall connect with existing sidewalks in the vicinity of the project.
- c.** For developments of 10 or more lots, the carrying capacity of intersections in the development and within one-thousand (1,000) feet of the development site, including major intersections in close proximity to the development, shall be analyzed under pre-development and post-development build-out scenarios, using Level of Service (LOS) analysis. Level of Service analysis shall conform to the criteria set forth by the Transportation Research Board of the National Research Council, as detailed in its publication *Highway Capacity Manual*, Special Report 209, 1985, or in the most recent subsequent edition or revision. The applicant must propose and construct approved traffic mitigation measures for any intersection where post-development traffic carrying capacity falls below a level of service of "D."

5. Curbing

Granite curbing shall be installed in accordance with the latest Massachusetts Highway Department construction specifications on all sides of all streets including primary, residential sub-collectors and residential access streets, in all zoning districts. Granite curbing shall be vertical granite curb (VA-4). Installation of granite curbing must precede the finish course of bituminous concrete pavement. Bituminous curbing is not allowed.

6. Sidewalks

- a.** As specified in Table 1 above sidewalks shall be constructed on both sides of streets in all zoning districts within the dedicated right-of-way. A strip of grass or landscaping at least three (3) feet wide, excluding curbing, must separate sidewalks from adjacent curbs. Sidewalks shall be constructed of cement

concrete. Wheelchair ramps shall be installed in accordance with Massachusetts State Law. Sidewalk construction shall be in accordance with the latest specifications of the Massachusetts Highway Department. Brick sidewalks are not recommended for safety reasons, but if brick is used detail must be approved by the Town Engineer. The applicant is encouraged to receive this approval prior to submission of application.

- b.** In order to facilitate pedestrian circulation between development street(s) and schools, parks, playgrounds, community facilities and nearby streets, the Board of Survey may require perpetual unobstructed easements at least twenty (20) feet wide to accommodate sidewalks or walking paths. Easements shall be indicated on the Plan.

7. Walls

Where retaining walls adjoin streets, the face of the wall must be constructed in accordance with the latest Massachusetts Highway Department specifications. Retaining walls shall not be permitted within the right-of-way embankment sections of streets without the written approval of the Board of Survey and the Town Engineer. Cemented stone masonry retaining walls are preferred.

8. Sideslopes

Areas beyond the sidelines of streets shall be sloped no steeper than four to one (4:1) (horizontal to vertical) grading to a point precisely coinciding with the surrounding ground or abutting lawns and properties. Sideslopes shall be loamed, seeded and rolled in accordance with the latest specifications of the Massachusetts Highway Department.

B. Stormwater and Surface Water Drainage and Management

These regulations impose further requirements than those of the Town's Stormwater Bylaw, Article 15 and shall apply to developments seeking approval under Board of Survey.

- 1.** A system of storm drains, culverts, ditches and related installations, including catch basins, gutters and manholes, shall provide adequate surface water disposal in terms of quantity and quality, including flooding and erosion and sediment control, subject to approval by the Board of Survey.
- 2.** By means of site planning, source controls, pollution prevention and DEP Best Management Practices, the disposal of stormwater from streets, roofs or other

impervious surfaces will eliminate adverse impacts on abutting or downstream properties.

3. By reference, the current/most recent Massachusetts DEP Stormwater Management Policy Handbook and Best Management Practices Standards and Regulations are incorporated into these Rules and Regulations. The Stormwater Management Standards apply as provided in the DEP Handbook.
4. To the satisfaction of the Town Engineer, proposed development will minimize the concentration, velocity and volume of runoff to adjoining properties. The Plan will detain stormwater on-site to the maximum extent practicable using natural site features and Best Management Practices, including groundwater infiltration. These standards shall apply as provided in item 3 above.
5. Technical design and construction standards for detention/retention basins, infiltration structures, groundwater separators, outlet control structures, sediment forebays, emergency overflow spillways, waterways and splashpads, shall conform to the latest specifications, design assumptions and standards of the Massachusetts Highway Department, consistent with DEP Stormwater Management Standards.
6. When development would increase runoff to downstream properties a detention/retention area shall be constructed. Detention areas will be designed to handle a 100 year storm as determined by the flood routing procedure described in the U.S.D.A., Soil Conservation Service National Engineering Handbook, HYDROLOGY, Section 4. Sideslopes shall not exceed three to one (3:1) horizontal to vertical slope and shall be loamed, seeded, rolled and designed in accordance with the latest technical specification of the Massachusetts Highway Department.
7. In addition to control of stormwater runoff, aesthetics should be factored into the design of detention/retention basins. To the maximum extent feasible, detention/retention basins shall be located on a separate drainage lot away from homes and lots adjacent to the proposed development. Design that conveys a natural appearance, such as a freeform shape with flat sideslopes, is preferable to a "swimming pool" shape. Box configurations should be avoided. Detention/retention basins shall be integrated with the natural landscape. Aesthetic design will conform to the requirements of the Board of Survey. Fencing of part or all of detention areas may be required.

Calculations: Hydraulic calculations, prepared by a Registered Professional Engineer, shall be submitted to validate proposed drainage systems design features.

8. An Operation and Maintenance Plan shall provide for the proper maintenance of the stormwater drainage system and ensure that systems function as designed and in accordance with DEP Best Management Practices. Detention/retention basins shall initially be the applicant's responsibility, transferring to the homeowner's association for long-term maintenance of both the structure and the landscaping around it. Basins and appurtenances shall be guaranteed from defect in construction and operation for a minimum period of three years for twenty percent (20%) of the value of improvements.
9. The biological and chemical properties of receiving waters must not be degraded by stormwater run-off from the development site. Provision for attenuating run-off pollutants and for ground water recharge shall be incorporated into stormwater management design. These standards shall apply as provided in item 3 above.
10. Proposed stormwater systems shall be properly connected with existing drains in adjacent streets, ways or easements prior to inspection. The homeowners association shall be responsible for the operation and maintenance of the stormwater system and shall be granted a maintenance easement. The Town Engineer will confirm the adequacy of the system at the time of application. The Town must also be granted an access and maintenance easement. Where adjacent property is not subdivided, provision shall be made for the projection of the drainage system by continuing drains to development boundaries.

The applicant must show the size and location of stormwater facilities and connections on the Plan. If drainage provisions should be found inadequate, because of conditions encountered during construction, the Board of Survey shall require additional drainage facilities at the applicant's expense. Stormwater field changes must be approved by the Department of Public Works and the Town Engineer and shall be identified on As-Built Plans

11. Infiltration structures shall be placed only in type A or type B soils as designated by the United States Soil Conservation Service. Systems must be sized according to permeability rates attained in the field.
12. All stormwater and drainage construction shall conform to the latest specifications of the Massachusetts Highway Department.

13. Drain pipe size shall not be less than twelve (12) inches in diameter, except as provided in Paragraph 5 of this Section.

14. Double catch basin gratings, within a single frame, shall be installed where the roadway slope directly above the basin is four percent (4%) or greater, or as designated by the Board of Survey. Catch basin gratings must not be hazardous to bicycle traffic and designed according to the assumption that they are fifty percent (50%) clogged. The height of water above them shall not exceed five (5) inches.

15. Lots shall be graded to prevent low spots that flood and create a public nuisance and to prevent excessive erosion. Where low spots cannot be avoided, they shall be drained by a pipe at least twelve (12) inches in diameter to the nearest street drains. A minimum thirty (30) foot wide access and maintenance easement shall be provided to the Town. This and all other drainage contribution to street drainage shall be incorporated into the overall stormwater design.

The applicant must dig test holes to determine the high ground-water elevation pattern throughout the development for the purposes of road and utility design and building elevation.

16. Catch basins must be located so that maximum surface flow between each basin shall not exceed two-hundred-fifty (250) feet. Drainage design shall incorporate by-pass calculations to determine if spacing less than 250' is required. Manholes must be located where drainpipes change direction or slope. Catch basins shall be installed at low points on both sides of the roadway near the upper point of curvature of curb roundings of intersecting streets. Catch basins must not be installed at driveways. Catch basins shall be connected to manholes and not to other catch basins.

17. Portland cement concrete or stone masonry headwalls shall be built at open ends of drainpipes and shall conform to the latest specifications of the Massachusetts Highway Department.

18. Open brooks or tributary ditches within the development shall be shaped to a cross-section and gradient approved by the Board of Survey. Sideslopes shall be no steeper than three to one (3:1) horizontal to vertical slope and shall be loamed, seeded and rolled in accordance with the latest specifications of the Massachusetts Highway Department. Riprap is required where flow velocity will exceed four (4) feet per second and on sideslopes at outer edges of

curvature, at changes in direction and adjoining headwalls. Riprap shall be placed, rather than dumped, where it is visible to the public.

19. Drainpipe slopes shall be designed to provide the following minimum velocities for pipes flowing full.

| Pipe (inches) | Diameter | Minimum Design Velocity (feet per Second) |
|---------------|----------|---|
| 12 - 42 | | 3 |
| 48 - 54 | | 4 |
| 60 - 66 | | 5 |
| 72 and larger | | 6 |

20. The quantity of storm water in the drainage system shall be based on the following criteria.

a. Run-off estimation shall be made as follows (subject to DEP Stormwater Management Policy):

1. Methods of run-off estimation for detention basins, open drainage and for pre/post-development run-off comparisons shall reference United States Department of Agriculture, Soil Conservation Service, National Engineering Field Manual, Chapter 2, revised 1971, based on 24 hour rainfall using a one-hundred (100) year design for storm frequency or return period.

2. Method of run-off estimation for drain pipes, infiltration structures and other closed systems shall use the "**Rational Method**" based on a twenty-five (25) year design for storm frequency or return period.

21. Building Grades: No cellar or garage floor connected to a public drainage system shall be set at an elevation less than two and twenty-five one-hundredths (2.25) feet above the top of the main drain line. Such floors shall be a minimum of one foot above the high ground-water table. Pipe size shall be six (6) inches minimum with a minimum slope of two percent (2%).

22. Foundation Drains: Foundation drains must be provided and connected to the Town's storm drainage system or to an open outlet on the lot. No foundation drainage shall be directed to the any street surface or Town sewer.

C. Sanitary Sewers

- 1.** The municipal sewer system shall be evaluated by the applicant to determine if adequate capacity exists for the proposed development at the point of connection.
- 2.** Sanitary sewers and appurtenances shall be constructed as shown on the approved development plan to provide adequate sewage disposal capacity for development lots and to provide adequate connection to the municipal sewer system. Pipe sizes, materials, grades and locations shall be shown on the plan. Sanitary sewer construction methods, materials and testing requirements shall conform to the latest specifications of the Massachusetts Highway Department.
- 3.** There shall be adequate capacity in the proposed sewer system for discharge from all future development, taking into account service to future development along the proposed ways.
- 4.** Quality standards for wastewater accepted into the municipal sewer system shall conform to the latest specifications of the Massachusetts Highway Department and shall meet applicable Massachusetts Water Resources Authority and Department of Environmental Protection Standards.
- 5.** Where connection to the municipal system requires an easement through land owned by others, evidence of an easement shall be required prior to approval of affected portions of a sewer system.
- 6.** The permitting of service connection shall require application to the Department of Public Works and payment of a fee. Works.
- 7.** House connections shall have a minimum slope of two percent (2%).
- 8.** Manholes shall be constructed at changes in slope or direction and shall not be separated by more than two-hundred-fifty (250) feet.
- 9.** Prior to acceptance of a proposed sewer system by Department of Public Works , an internal TV inspection will be required, at the applicant's expense, as directed by the Department of Public Works. Manholes shall be vacuum and pressure tested for water-tightness.
- 10.** Infiltration allowance for a proposed sewer system shall meet applicable Massachusetts Water Resources Authority and Department of Environmental Protection Standards.

11. Pipe sizes and locations shall conform to the American Society of Civil Engineers Manual of Practice No. 37 or as approved by the Board of Survey and the Department of Public Works. Minimum pipe size is eight (8) inches.

12. The minimum allowable slopes for sanitary sewers shall be as follows:

| Pipe Size (inches) | Minimum Slope (feet per foot) |
|---------------------------|--------------------------------------|
| 8 | See table below |
| 10 | 0.003 |
| 12 | 0.002 |
| 15 | 0.0015 |
| 18 | 0.0012 |
| 21 | 0.0009 |
| 24 | 0.0008 |
| 27 | 0.0007 |
| 30 | 0.0006 |
| 36 | 0.0005 |

| Minimum Slope For 8 Inch Pipe | Number of Service Connections |
|--------------------------------------|--------------------------------------|
| 0.030 | 10 or less |
| 0.020 | 11-20 |
| as directed by D.P.W. | 21 or greater |

13. Increasing Size: When sewer size is increased, or when a smaller sewer joins a larger one, the invert of the larger sewer should be lowered to maintain the same energy gradient. An approximate method for securing this result is to place the 0.8 depth-point of both sewers at the same elevation.

14. Alignment: Sewers must be laid with uniform slope and alignment between manholes.

15. High Velocity Protection: Where sewer slope and volume produce velocities of 15 feet per second at average flow, special provisions as approved by the Town Engineer shall be made to protect against erosion and shock.

16. Drop Type Manhole: A drop pipe should be provided for a sewer entering a manhole at an elevation above the manhole invert.

17. Sewer pump stations shall be placed on separate, unoccupied lots and shall be the responsibility of the applicant initially and subsequently of the

homeowner's association. Pump stations and appurtenances shall be guaranteed from defect in construction and operation by a performance guarantee for a minimum of twenty (20) years for an amount not to exceed twenty percent (20%) of the value of improvements.

18. Inverted Siphons: Inverted siphons shall be prohibited unless approved by the Department of Public Works.

D. Water System

1. Water mains, laterals, hydrants, gate valves and other fittings and appurtenances shall be constructed and installed to provide development lots with adequate water supply for domestic use and fire protection. Water supply shall be adequate for future development of the development in terms of quantity, quality flow and pressure, taking into consideration service to other approved developments.
2. Provision shall be made for projection of the system to the exterior boundaries of the development by continuing water mains. The size and arrangement of mains shall be approved by the Board of Survey and the Department of Public Works.
3. Water mains, laterals, hydrants, service connections, gate valves and appurtenances shall comply with the latest American Water Works Association standards and with standards and specifications for water installation, construction and materials as currently set forth by the Massachusetts Highway Department.
4. Hydrants shall be no more than 500 feet apart and shall be located as near the street sideline as possible and behind sidewalks. Hydrants shall be located on lot boundary lines wherever possible.
5. Water mains shall be looped and installed and tested according to current Massachusetts Highway Department specifications. The Department of Public Works may waive the requirement for looping of water mains and may require other water system improvements to assure reliability of supply and adequacy of fire flow.
6. Applicant will verify that adequate water supply exists for the proposed way.

E. Street Construction

1. General

Development ways and portions thereof shall be constructed and brought to finish grade as indicated on the approved Plan and in accordance with the requirements of this section.

The applicant shall furnish and maintain grade stakes and such temporary structures as may be necessary or required by the Board of Survey for marking and maintaining points and lines for road and utility installation throughout the construction of the development.

Public utilities, applicants, or contractors must notify the Engineering Department and Board of Survey, in writing, at least three (3) days prior to starting a job and by telephone call to the Dispatch Center at 7:00am on the morning work starts.

The applicant must complete road improvements up to binder course within a year from the date of plan approval and up to a wearing course within three years unless the Board of Survey approves a different schedule.

Work done on connecting streets shall require full repaving of the entire width of the street. A trench patch will not suffice.

2. Procedure

A schedule for the completion of all work shall be provided to the Department of Public Works for review and approval. The Public Works inspector on the job must approve each step of the schedule.

3. Clearing and Grubbing of Right-of-Way

The right-of-way shall be cleared according to the requirements of the standard road cross-section, prior to any other work. Trees of aesthetic value over four (4) inch caliper may remain provided they are located at least five (5) feet from the proposed side line of the finished roadway and are approved by the Tree Warden and the Board of Survey. If fill is to be placed around trees, a tree well shall be constructed as proposed in the plan and as approved by the Town Engineer .

4. Excavation and Sub-grade Preparation

Loam and other yielding material shall be removed from ways to a depth of four (4) feet or greater below the finished sub-grade and replaced with an

approved material as required by the Department of Public Works. Loam, peat, organic matter or other soft material shall not be used below sub-grade, which must be thoroughly compacted before applying the gravel surface. Ledge and large boulders anywhere in the full cross-section of the roadway must be cleared to a minimum depth of eighteen inches (18") below the finish surface.

Excavate or fill and fine grade the sub-grade to conform to the cross-section on the approved plan for the entire way and sidewalk width. The sub-grade and trenches shall be thoroughly compacted by rolling or water tamping before any gravel surface is applied as directed by the Public Works inspector.

Roadways shall be brought to finish grade as shown on the Typical Cross Section Plans and on the profile of the approved plan with at least the top twelve (12) inches consisting of gravel base, properly compacted, as specified herein. Bituminous concrete shall be applied in the following manner: A binder course two and one half (2 1/2) inches thick, compacted, followed by a finish course one and one-half (1 1/2) inches thick and compacted. The bituminous concrete mixture shall conform to the specifications for Class I Bituminous Concrete pavement of the Massachusetts Highway Department in quality of materials and methods of application.

5. Gravel Base

Gravel base shall consist of crusher-run gravel conforming to Massachusetts Department of Transportation Specification for Processed Gravel. Before the gravel is spread, the roadbed shall be shaped to a true surface conforming to the proposed cross-section of the road. Bank gravel for the base shall be spread in two layers and rolled true to lines and grades with an approved three wheel roller or approved equal, weighing not less than ten (10) tons to yield a ten inch (12") depth after rolling. Layers shall be compacted to not less than ninety-five percent (95%) of the maximum dry density of the material as determined by the Standard A.A.S.H.T.O. Test Designation T99 compaction test, method C at optimum moisture content. Any depression that appears during or after the rolling shall be filled with bank gravel and be re-rolled until the surface is true and even. When required by the Department of Public Works, samples of the gravel to be used shall be tested for gradation by sieve analyses and shall be tested for compaction. All tests are at the applicant's expense.

F. Utility Services

Utility services, including drains, shall be installed to a point two (2) feet beyond the way sideline prior to placement of asphalt concrete course. A plan showing the location of utility stubs shall be provided.

G. Underground Utilities

1. Utilities servicing new developments, including electricity transformers, telephone, cable, closed circuit television and other communication lines, both mains and laterals, shall be provided by underground wiring within easements or within proposed dedicated public rights-of-way, installed in accordance with prevailing standards and practices of companies providing such services.
2. Lots that abut existing easements or proposed public rights-of-way where overhead utilities have previously been installed may be supplied with service from those overhead lines, but the service connections from the overhead lines must be underground. Where a road widening, extension of service or other condition related to a development requires the replacement or relocation of utilities, the work must be underground.
3. Where overhead lines are permitted by waiver, the placement and alignment of poles must mitigate the visual impact of overhead lines. Alignments and pole locations shall be carefully routed to avoid location along horizons; clearing swaths through treed areas shall be avoided by selective cutting and a staggered alignment of trees shall be planted in open areas and at key locations to minimize the view of poles and lines; utilities shall follow rear lot lines and existing alignments.
4. The looping of utilities is encouraged.
5. Upon application, a plan showing the location of telephone, electric and other utility and communication wires, showing wiring for street lighting shall be furnished to the Board of Survey, Building and Wiring Inspectors, Town Engineer and the Department of Public Works. The Wiring Inspector and Board of Survey shall be notified in writing three (3) days prior to the installation of wires so that their installation may be properly supervised.

H. Fire Protection

1. Fire Alarm System

A fire alarm system shall be installed underground in accordance with the specifications and requirements of the Arlington Fire Department as promulgated and amended from time to time.

2. Fire Protection Water Supply

Water pressure and volume must meet minimum Federal and State standards for fire protection.

I. Granite Bounds and Markers

Granite bounds 6" x 6" x 4' with a 3/8 inch drill hole in the center must be furnished and set on both sidelines of all points of change of direction or curvature of ways, and points of tangency, and at the intersection of the sideline and sidelines of existing streets and ways. In addition, all lot corners shall be delineated with three (3) foot high iron pins of no. 8 re-bar. All granite bounds and iron pins along right-of-way sidelines shall be set to the satisfaction of the Town Engineer.

Granite bounds shall be accurately set in the ground with the top flush with the adjacent finish grade unless otherwise specified by the Town Engineer. The applicant shall dig a hole large enough to place granite bounds and thoroughly tamp excavated material around them to hold them securely in position. If excavated material is not satisfactory for backfill, in the opinion of the Town Engineer, then the holes must be filled with gravel.

J. Street Signs

Street name signs shall be furnished and erected, at applicant's expense, prior to final sign-off in accordance with Department of Public Works specifications and erected at all street and way intersections prior to the occupancy of any house on the way. Street name signs shall conform to standards established by the Town and be consistent with state regulations.

K. Driveway Entrances

Driveways shall be designed to eliminate potential traffic conflicts and other hazards, and shall conform to Town of Arlington Zoning Bylaw requirements.

L. Street Tree Plantings

1. Existing trees over four (4) inches in diameter within the proposed right-of-way shall be retained to the greatest extent feasible.
2. Invasive tree species are prohibited. A Prohibited Plant List of invasive species in Massachusetts is maintained by the MA Department of Agricultural Resources, and can be found at http://www.mass.gov/agr/farmproducts/proposed_prohibited_plant_list_v12-12-05.htm. Native plant materials are encouraged.
3. On each side of the way one tree shall be planted for every thirty (30) linear feet of way frontage and not less than two trees per residential house lot. The Board of Survey may grant a waiver to this requirement only if there are shade trees growing along the right of way or on an abutting property that in the opinion of the Board of Survey meet the intent of these regulations.
5. Trees or shrubs shall not be planted at street corners or intersections where they could become a traffic hazard by obstructing vision or otherwise compromising safety.
6. Final grades shall be established before plantings are installed.
7. Trees shall be a minimum of 2 1/2 - 3 inches caliper when planted and shall be a mixture of varieties suitable as street trees, as determined by the Tree Warden Native trees are preferred.
8. Tree planting plan must be approved by Tree Warden , including location of trees. The Tree Warden shall be notified when trees are being planted to confirm adherence to these regulations and to approve optimal planting season for species survival.
9. The tree pit shall be dug one-third larger than the earth-ball of each plant. Spoils shall be removed and organic topsoil shall be used for the planting medium.

- 10.** Trees shall be staked in three directions with #12 wire coated by an insulating material where the wire encircles the tree.
- 11.** Utility and transformer boxes shall be suitably screened on all sides with shrubs at least 18 inches tall, when planted and which are expected to grow to at least the height of the object they are screening.
- 12.** The applicant shall be responsible for watering all shrubs and trees until established or until the homeowner or homeowner's association assumes responsibility. In a development the applicant will be liable for all planted trees as to their erectness and good health for two years after planting as determined by the Tree Warden.
- 13.** Where a median center strip or cul-de-sac island is proposed or required by the Board of Survey, the applicant shall provide a planting plan designed and stamped by a registered landscape architect. Within thirty days of the planting, the landscape architect must certify that the islands or median strip have been planted in accordance with the plan.
- 14.** The applicant shall guarantee the health and good condition of trees and required landscaping for two (2) years after the time of planting. To ensure the establishment of landscaping, the applicant shall post a two-year landscape bond. The landscape maintenance/defect bond shall equal twenty percent (20%) of the value of the landscaping improvements. If seasonal conditions should prevent the installation of plantings prior to the request for lot release, the applicant shall post a landscape bond for the full cost of required plantings.
- 15.** The Tree Warden shall certify compliance with this section and the acceptability of street tree plantings prior to the acceptance of a way by the Town.

M. Exterior Lighting

- 1.** The applicant shall provide and install street lighting, bases, poles, wiring and fixtures as shown on the Plan. Exterior lighting shall be adequate for the safe use of the development in nighttime hours in accordance with the standards set forth in the latest applicable edition of the Illuminating Engineering Society "Lighting Handbook."

 - a.** Lighting must be provided at street and way intersections, pedestrian walkways and crossings and recreation areas.

- b.** Spacing of light standards shall be equal to approximately eight to ten times the height of the standard unless otherwise directed by the Board of Survey and Town Engineer. Light standards shall be located on the projections of lot sidelines where possible, terminating with a standard at the end of a cul-de-sac where applicable.
 - c.** The maximum height of standards is twenty-five (25) feet.
 - d.** The height and shielding of lighting standards shall provide proper lighting without hazard to drivers or nuisance to residents. Lighting must comply with Article 14 of Title V of the Town of Arlington General Bylaws.
 - e.** The design of lighting standards shall be consistent with the character of the development and the Town as directed by the Board of Survey. Energy efficient fixtures shall be used whenever possible.

N. Easements

Utility easements to the Town across, under or above lots or centered on rear or side lot lines, shall be provided as required by the Board of Survey and shall be at least thirty (30) feet wide. The Department of Public Works may require a wider easement. Where a development is transected by a water course, drainage way, channel or stream, the Board of Survey shall require an easement substantially as wide as the water course, at least fifteen (15) feet wide and within ten (10) feet of the top of slope of the water course. The grade and size of the easement must allow the safe passage of Town of Arlington maintenance vehicles.

O. Natural Features and the Environment

During construction existing landscaping will be preserved in its natural state as far as practical and natural features adding attractiveness and value to the property shall be preserved.

The development shall preserve the natural topography and landscaping and minimize grading and filling to the maximum extent possible. Cuts and/or fills in excess of 6 feet as measured from the original natural grade to the finished grade shall not be allowed.

To the maximum extent possible, the development plan will take into account and preserve the scenic or natural beauty of the area, significant trees, vistas, topography, historic sites and rare or irreplaceable natural or manmade assets.

Wherever possible, buildings shall be sited to take maximum advantage of solar exposure and care shall be taken to protect solar access of existing structures.

P. Erosion & Sediment Control

- 1.** The applicant shall control erosion and sediment and shall stabilize exposed soils during construction and land disturbance activities. Erosion control shall conform to local, state and federal regulations. <http://www.mass.gov/dep/water/essec1.pdf>
- 2.** Development shall avoid adverse erosion impacts that would result in dangerous or unhealthy conditions.
- 3.** During construction and land disturbance activities, the applicant will minimize soil erosion and sedimentation to watercourses and water bodies or wetlands by an active program meeting the requirements of the Department of Environmental Protection Best Management Practices and shall conform to any Order of Conditions of the Conservation Commission and comply with the Wetlands Protection Act and regulations and the Town of Arlington Wetlands Bylaws and regulations.
- 4.** Sloped areas will be terraced to avoid severe cuts and fills and the need for retaining walls.

Q. Community Context

- 1.** Supplemental landscaping and perimeter buffer yards shall provide a physical and visual separation of the development from adjacent uses, define street edges, enhance the appearance of the development and protect abutting properties from adverse impacts of the development.
- 2.** Development shall be designed with sensitivity to existing conditions and improvements in order to minimize the impact to abutting uses.
- 3.** Supplemental landscape plantings and treatments shall screen utility boxes, pump stations and similar structures and help integrate detention/retention basins and other drainage systems within the aesthetics of the development.
- 4.** Where appropriate, walking trails shall be established or preserved and incorporated into the Plan to provide linkages to an existing or potential trail network.

5. Where appropriate, bicycle trails shall be established. Trails should meet or exceed Mass State Bicycle Trails specifications.

R. Cleaning Up

Development must be final cleaned to maintain a neat and orderly appearance, free from debris, excessive slopes, deep holes and objectionable materials. On completion of work, the applicant shall remove temporary structures, rubbish and surplus materials from roadways and adjoining properties.

S. Work Notification

The Town of Arlington Public Works Dept., Engineering Department and Board of Survey must be notified at least thirty-six (36) hours in advance of any road, municipal service or utility construction. The Fire Department shall be notified at least three (3) days before the installation of any work on the fire alarm system. Utilities shall not be backfilled without written approval from DPW and Engineering, or the Fire Department in the case of the fire alarm system. Backfill approval does not constitute acceptance of utilities by the Town of Arlington. At applicant's own expense, the applicant shall have utilities located in three dimensions on a plan prepared by a Registered Land Surveyor or Professional Engineer, and proof of location, including field notes, shall be presented to the Town Engineer for approval prior to back-filling. The applicant will provide "As-built" plans, with ties to all utility structures, as required in these Rules and Regulations.

V. Inspections Procedures:

The applicant shall be responsible for requesting inspections as improvements are installed. Inspections are required for major construction stages and prior to the reduction in or release of a performance guarantee. Inspections are required at the commencement of the following work:

1. Site layout and controls.
2. Sub-base and roadway layout/preparation.
3. Rough grading, fine grading and compaction.
4. Installation of water, storm drainage, sewer facilities and their appurtenances.

5. Installation of other underground utilities such as electric, telephone, gas, cable T.V. or high speed computer lines, and fire alarm distribution lines and services.

In no case shall utilities be backfilled until the Town Engineer has inspected and approved installation.

The applicant must uncover installations performed without the sanction of the Town Engineer before additional improvements can proceed.

In addition to those cited above, inspections shall be required to verify the adequacy of the following: binder/finish paving of roadways, sidewalks, curbing, monuments, way signs, loam and seed, tree planting, site cleanup and as-built drawings. Sewer and water lines must be air tested by an independent testing company to verify the operational performance of these services. Sewer manhole structures must be water tested.

Field changes to approved Plans without approval of the Town Engineer are prohibited, no matter how minor. The applicant must immediately report any discrepancies in field work or conditions to the Town Engineer, the Board of Survey and other Town departments with jurisdiction relating to the discrepancy, for their review, inspection and approval. Changes must be submitted to the Board of Survey for review and may require the filing of an Amended Plan pursuant to these Rules and Regulations.

Certification by a Registered Land Surveyor is required to verify monuments and the proper installation of water, sewer and drainage facilities. Certification by the Fire Chief is required for fire alarm installation. Certifications must be filed in duplicate with the Board of Survey.

The applicant shall provide complete and safe access to the Town personnel conducting inspections. Forty-eight (48) hours advance notice is required for inspection requests.

Inspections will be performed between the hours of 9:00 a.m. and 4:00 p.m., Monday through Friday, unless prior permission is obtained from the DPW Superintendent or Town Engineer to allow inspections during alternative hours. If inspections are required on evenings or weekends, the applicant will bear the full cost of the DPW Superintendent and or Town Engineer's time, four (4) hours minimum.

VI. Rescission, Modification, and Automatic Rescission of Development Plan.

1. The Board, on its own motion or on the petition of any person interested, shall have the power to modify, amend or rescind its approval of a Development, or to require a change in a plan as a condition of retaining approval. All of the provisions of the Board of Survey Law relating to the submission and approval of a development plan, so far as apt, shall be applicable to the approval of the modification, amendment or rescission of such approval and to a plan which has been changed under this section.

The Board may take action under this section where there are circumstances or new information which causes the Board to question whether the development as approved is or will remain in conformity with the requirements of the Board of Survey Regulations.

2. Circumstances in which automatic rescission of a development approval takes place include the following:

- a. with respect to any approval of a plan that results from the failure of the Board to act within prescribed time periods as set forth in the Act, the failure of the applicant to record at the Registry of Deeds a copy of the application accompanied by the certification of the Town Clerk stating the fact that (i) the Board failed to act within the time prescribed, (ii) that no appeal has been filed, and (iii) that the grant of the application resulting from the failure to act has become final, is recorded with the Registry of Deeds within thirty (30) days following the expiration of the appeal period;
- b. failure to complete all ways and install all municipal services shown on the development plan within three (3) years shall result in the automatic rescission of the approval of said plan, except that the applicant may request in writing, for good cause shown, a one year extension of the time to perform such work;
- c. failure of the developer to comply with all applicable Arlington Zoning By-Laws and requirements of the Board of Health and Conservation Commission, or unauthorized departure from any agreements made or plans submitted, whether or not at the direction of other public agencies, shall result in the automatic rescission of the approval of the plan; and
- d. with respect to any covenant, plan or other document that the Board may require to be recorded with the Registry of Deeds, the failure of the applicant to record such document within thirty (30) days following the expiration of the appeal period.

VII. Performance Guarantee

A. Performance Guarantee

Before endorsement of its approval of a plan, the Board shall require that compliance to design standards, construction specifications, and special conditions of the approved plan be secured by one or more of the following methods: (1) a proper bond; (2) a deposit of money, letter of credit or negotiable securities; (3) a covenant, executed and duly recorded by the owner of record, running with the land; or (4) an agreement executed after the recording of the a first mortgage covering the premises shown on the plan or a portion thereof, which agreement shall be executed by the applicant and the lender and shall provide for the retention by the lender of funds sufficient in the opinion of the board and otherwise due the applicant, to secure the completion of the proposed improvements.

1. The applicant or developer shall file a performance bond, a deposit of money, letter of credit and/or negotiable securities in an amount and kind determined by the Board of Survey to be sufficient to cover the cost of all or any part of the improvements required by the Board of Survey Rules and Regulations, covenants, conditions, agreements, terms and provisions of the approved Plan, and also any Performance Guarantee requirements of the Board of Health. The board shall have discretion to reject an applicant's proposed bond, letter of credit or negotiable security if the Board has a reasonable basis for finding that the issuing bank, surety company, insurance company or publically traded company is not solvent or otherwise financially stable.

The amount of the performance guarantee shall be determined by the Board of Survey in consultation with the Town Engineer. Such amount shall take into consideration the Town Engineer's standard contingency and inflation factors.

Such bond, letter of credit or security, if filed or deposited, shall be approved as to form and manner of execution by the Town Counsel and as to sureties by the Town Treasurer. Said performance guarantee shall be contingent on the completion of such improvements within three (3) years of the date of the bond.

The applicant or developer shall further agree that no structure will be occupied until at least the base course of the bituminous concrete pavement and the utilities are completed in the streets which serve those structures.

If such specified improvements are not completed within the prescribed time, the Board of Survey shall proceed with enforcement thereof as provided in the Board of Survey Law, or revise the amount of the performance guarantee to reflect increases in estimated costs for completion of construction.

2. By a covenant, executed and duly recorded by the owner of record, running with the land, whereby such ways and services shall be provided to serve any lot before such lot may be built upon or conveyed other than by mortgage deed and/or by a so called "tripartite agreement" by and between the applicant or developer, the mortgage lender for such applicant or developer, and the Town, whereby the lender shall retain sufficient funds to secure the completion of the improvements; provided, that a mortgagee who acquires title to the mortgaged premises or part thereof may sell any such lot, subject to that portion of the covenant which provides that no lot shall be built upon until such ways and services have been provided to serve such lot; and provided, further that

nothing herein shall be deemed to prohibit a conveyance by a single deed, subject to such covenant and/or the tripartite agreement, of either the entire parcel of land as shown on the Development plan or of all lots not previously released by the Board of Survey. A deed of any part of the Development in violation thereof shall be violable by the grantee prior to the release of the covenant but not later than three years from the date of such deed.

Any covenant given under the preceding paragraph and any condition required by the Board of Health shall be either inscribed on the plan or contained in a separate document, referred to on the plan.

B. Converting Covenant to Another Performance Guarantee

1. If the applicant request that lots be released from a covenant and that the improvements remaining to be constructed or installed be secured by another form of performance guarantee, a formal written request shall be sent to the Board of Survey by registered mail which sets forth and includes:
 - a. The extent and scope of remaining work to be completed to satisfy the requirements for the construction or installation of all required ways and municipal services;
 - b. An estimate, pursuant to these Regulations, which reflects all remaining costs related to the construction and/or repair of all required ways and installation of all required municipal services; and,
 - c. The form and type of guarantee being given to the Board of Survey to secure all remaining improvements.
2. The Board of Survey will make a determination as to the sufficiency of the submitted estimate, and, if such estimate is accepted, a new performance guarantee in a form and amount satisfactory to the Board will be given by the Developer to the Board of Survey. Upon acceptance by the Board of Survey of the new performance guarantee, all applicable lots shall be released from the covenant.

C. Schedule Of Release Of Lots And Reductions To The Performance Guarantee

For a partial release of a covenant, surety, or deposit the applicant or developer shall submit a written request, detailing what work is claimed to be satisfactorily completed, and which lots, if any, are to be released.

When only a portion of the streets and other improvements shown on the Plan have been constructed or installed and a release of covenant is requested, the Board of Survey shall consider as satisfactorily completed only such lengths and parts as will, in and of themselves, form convenient and adequate and complete systems without the necessity of further extension or improvement, and shall consider eligible for release only such lots as front on, are connected to, or otherwise served by such streets, utilities and other improvement.

No release of lots, for building or sale, from the restrictions of a covenant shall be granted by the Board of Survey, unless the applicant or developer constructs a temporary turn-around at the end of the constructed portion of each street in the Development. Under no circumstances shall the Board of Survey authorize the release

of more than fifty percent (50%) of the total number of lots in the Development until such time that the Development is determined to be substantially complete, at the eighty-five percent (85%) completion level.

The schedule for reduction in performance guarantee shall be as follows:

1. The first reduction in performance guarantee may be approved by the Board of Survey when sixty-five percent (65%) of the total estimated cost of the Development's improvements are certified as complete.
2. The second reduction in performance guarantee may be approved by the Board of Survey when eighty five percent (85%) of the total estimated cost of the Development's improvements are certified as complete, and at such time, the Board of Survey may authorize release of the remaining lots in the Development; and
3. The final release of the performance guarantee is subject to Subsection F. Determination of Completion of the Provisions of the Performance Guarantee or Covenant.

D. Retainage For Maintenance/Defect Guarantee

Prior to the release of the performance guarantee or covenant, the applicant shall provide sufficient surety for a maintenance/defect guarantee, in an amount not to exceed twenty percent (20%) of the total cost of the improvements as determined by the Board of Survey. The final release of the maintenance/defect guarantee shall be contingent on the street being approved by the Town Engineer and Town Meeting for street acceptance, unless the Board of Survey waives this provision.

E. Action On The Bond

If pursuant to section VI, herein the Development approval is rescinded by the Board or automatically rescinded, the Board may enforce such bond and apply any such deposit for the benefit of the Town. Development improvement or portions thereof not completed within the time required shall thereafter be completed in accordance with the design and construction standards of the Board in effect upon the expiration of such time.

F. Determination Of Completion Of The Provisions Of The Performance Guarantee Or Covenant

Prior to final release of the Performance Guarantee or covenant, the Board of Survey shall determine to its satisfaction that the provisions have been complied with, including a requirement that the developer or applicant submit to the Board the following items:

1. A certificate from a Registered Professional Engineer along with written evidence from the Department of Public Works and Town Engineer that the streets, drainage and municipal services conform to the Board of Survey requirements in accordance with the approved Plan.
2. A certificate from a Registered Land Surveyor, approved in writing by the Town Engineer that all markers, bounds, and monuments as specified by these rules and regulations and the Plan, are in place and are accurately located.
3. The original and three (3) copies of the following as-built plans and profiles, prepared by a Registered Engineer or Registered Land Surveyor and approved in writing by the

Town Engineer, shall be submitted to the Board of Survey.

- a. A plan and profile of the streets and easements, detailing the location, elevation and pipe size of all utilities and showing appurtenances, such as, but not limited to, manholes and valves, and including rim and invert grades of manholes, and percent of slope for sewer and drain line.
- b A plan and profile, suitable for submission to the Town Meeting for street acceptance purposes.
4. Written evidence from the Fire Chief that the fire alarm system conforms to the Board of Survey specifications and the Plan.
5. Written evidence from the Tree Warden that the street tree planting requirements of the Rules and Regulations and the Plan have been complied with.
6. Written evidence from Town Counsel that the applicant or developer has executed an instrument in proper legal form, transferring to the Town, without cost, valid unencumbered title to all streets and public ways, common sanitary sewers, storm drains, water mains, and other applicable municipal services, and appurtenances thereto, constructed and installed in the Development or portion thereof to be approved, and conveying to the Town, without cost and free of all liens and encumbrances, perpetual rights and easements to construct, inspect, repair, renew, replace, operate and forever maintain sewers, water mains, storm drains, including open channel brooks, pipes, conduits and other appurtenances, and to do all acts incidental thereto, in, through and under the whole of all streets in the Development or portion thereof to be approved, and if any such services have been constructed and installed in land not within such streets, then in, through and under a strip of land extending at least ten (10) feet in width beyond the center line of any pipeline or conduit and at least ten (10) feet beyond the top of slope of any stream, drainage ditch, or other open channel and the water, sewer and/or drain lines shall be placed in this easement as instructed by the board of Public Works, but shall be located so that any future excavation will not disturb any land beyond the easement.

To facilitate the above described transfers, the developer shall retain the fee (ownership) in all streets, ways and other land to be transferred to the town during the development of and sale of or other encumbrances of any lot in the development. The developer shall also make certain that all required easements are properly recorded on each and every lot on which an easement is to be placed.

7. Written evidence from the Board of Health that the Board's requirements have been complied with.
8. Written evidence from the Conservation Commission that any order of conditions issued under the Wetlands Protection Act, as amended, has been complied with.
9. Written evidence from all other Local, State, and Federal Boards or agencies that required permits under these Rules and Regulations have been met.

G. Release Of Performance Guarantee Or Covenant

The penal sum of any such bond, or the amount of any deposit held under Section VII., above, may, from time to time, be reduced by the Board of Survey and the obligations of

the parties thereto released by said Board in whole or in part.

Upon completion of the provisions of the performance guarantee or covenant with respect to any lot, pursuant to Subsections C. and D., herein, the applicant shall send by registered mail to the Town Clerk and the Board of Survey a written statement that the said construction or installation in connection with which such bond, deposit or covenant has been given has been completed in accordance with said rules and regulations, such statement to contain the address of the applicant. If the Board of Survey determines that said construction or installation has been completed, it shall release the interest of the Town in such bond and return the bond or the deposit to the person who furnished the same, or release the covenant by appropriate instrument, duly acknowledged, which may be recorded. If the Board determines that said construction or installation has not been completed, it shall specify in a notice sent by registered mail to the applicant and to the Town Clerk the details wherein said construction or installation fails to comply with its rules and regulations and upon failure so to do within forty-five (45) days after the receipt by said clerk of said statement all obligations under the bond shall cease and terminate by operation of law, any deposit shall be returned and any such covenant shall become void. In the event that said forty-five (45) day period expires without such specification, or without the release and return of the bond or return of the deposit or release of the covenant as aforesaid, the said clerk shall issue a certificate to such effect, duly acknowledged, which may be recorded.

Following the recording of a first mortgage covering the premises shown on the plan or a portion thereof given as security for advances to be made to the applicant by the lender, the Board of Survey may, at its option, release lots from the operation of the covenant given pursuant to clause (2) above, without receipt of a bond or deposit of money upon delivery to the Board of Survey of an agreement with the Board of Survey, which agreement shall be executed by the applicant and the lender and shall provide for the retention by the lender of sufficient funds otherwise due the applicant to secure the construction of ways and the installation of municipal services. Said agreement shall also provide for a schedule of disbursements which may be made to the applicant upon completion of various stages of the work, and shall further provide that in the event the work is not completed within the time set forth by the applicant, any funds remaining undisbursed shall be available for completion.

VIII. References:

Town of Arlington Water, Sewer & Drain Regulations & Specifications, Engineering Division.

Massachusetts Highway Department Project Development and Design Guide